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Feed Stuff Analyses

LICENSED BRANDS OF AGRICULTURAL LIME

A. F. WOODS, President
H. B. McDONNELL, State Chemist

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ADDRESS CHEMICAL DEPARTMENT
MARYLAND STATE COLLEGE OF AGRICULTURE
COLLEGE PARK, MD.

ANALYSES OF

Feeds Sold in Maryland

BY THE CHEMICAL DEPARTMENT OF

The Maryland State College of Agriculture

Dr. H. B. McDonnell, Professor of Chemistry,— State Chemist.
L. B. Broughton, M. S., Professor of General Chemistry.
R. C. Wiley, B. S., Assistant Professor of Chemistry.
L. H. Van Wormer, M. S., Assistant Chemist.
F. C. Brimer, B. S., Assistant Chemist.
T. B. Leith, B. A., Assistant Chemist.
†————————, Assistant Chemist.
F. G. Baggs, Clerk.
R. F. Malone, Stenographer.

This bulletin contains the results of analysis of samples feeding stuffs obtained from June, 1918, to May, 1919, inclusive. The work has been mostly limited to "concentrated feeding stuffs," as defined in the feed law. The examination of wheat bran, middlings, corn meal and similar feeds has been limited, as a rule, to a microscopic examination for adulterants and have been found practically free from adulteration and are not listed herein.

The feeds herein are, as a rule, by-products from some industry, as the manufacture of oils, alcohol, whisky, beer, breakfast foods, etc., or mixtures of several of them with some refuse molasses. The latter has feeding value, is liked by the animal and prevents the separation of fine and heavy ingredients from the lighter, bulky material of the mixture.

FEED ANALYSIS.

A complete analysis of a feed separates it into its constitutional parts, or groups of constituents having similar properties. The usual constituents are water, ash, protein, fat, fiber and nitrogen-free extract.

WATER is present in all feeds and is an important article of commerce in this way. Old grain, called "dry," will contain about 10 percent, while new grain will contain more. If the amount is over 14 or 15 percent the grain or feed is very liable to mold and ferment. Fresh fruits and vegetables, as cabbage, turnips, etc., frequently contain over 90 percent of water. The water content of feed will change on storage, the amount of change depending on the condition at the start, method of stor-

†Vacant.

ing, temperature and humidity of the air, etc. If the feed has been kiln-dried, as with dried brewer's or distiller's grains, molasses feed, etc., gain in weight is common. This would be indicated if the packages weigh more than the guaranteed weight and, in that case, a corresponding decrease in the percent of the other constituents should be expected. On the other hand, should the material lose moisture, a corresponding increase in the percent of the other constituents (but not in the actual amount) occurs.

The changes in moisture content are very important in connection with sampling and analysis and the proper care of samples for analysis—points which are liable to be entirely overlooked by those who have not been instructed in such matters.

ASH, as its name indicates, is the part of the feed which remains after burning. It is the mineral part, which has its origin in the minerals of the earth (soil). All other parts of the feed have their origin, either directly or indirectly, from the air.

PROTEIN, or crude protein, is the nitrogenous part, calculated from the nitrogen by multiplying it by 6.25. It includes albumens and other nitrogenous bodies not so valuable as food. Protein is essential for the formation of flesh, nerves, hair, feathers, etc., in fact nearly all tissues of the animal body, except fat, and it may serve to form fat.

FAT, or "crude fat," is the ether extract obtained by treating the dry substance with ether. In the case of grains, seeds, nuts and flesh it is nearly pure fat and oil, but with hay, grasses and coarse fodders it contains considerable amounts of wax, gum, etc. It is often a valuable constituent of feed, is the most concentrated form of energy, and serves to build fat in the animal when in excess of its immediate requirements. Large amounts of fat are not tolerated by farm animals, as a rule.

FIBER, or "crude fiber," is the fibrous, woody part, not soluble in ether, dilute acid or alkali. It is largely indigestible, but serves to give the ration proper bulk. The digestibility varies with the nature of the fiber and the kind of animal. The amount of fiber is small in flesh, cereal grains and nuts, but large in stems, stalks, hays, straws, fodders, husks, hulls, cobs, etc., and its amount, as shown by analyis, indicates the presence of such materials.

NITROGEN-FREE EXTRACT, sometimes called "carbohydrates," or "soluble carbohydrates" (thereby excluding the fiber, which is an insoluble carbohydrate), is obtained by finding the amounts of the constituents enumerated above and substracting this sum from 100 percent. It includes starch, sugars, pentosans, etc., which may be determined separately.

For inspection purposes it is generally sufficient to determine the amount of protein, fat and fiber, as this will indicate if the feed has been adulterated with inferior coarse material, such as hulls, straws, cobs, etc., as such substances are low in protein and fat but high in fiber.

In the following table the analyses are given in percentage, or pounds in a hundred.

No.	Name of Manufacturer and Feeding Stuffs	Place of Sampling	Protein.		Fat or Ether Extract.		Crude Fiber.	
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Akron Feed & Milling Co. Akron, Ohio.							
29882	Portage Stock Feed	Detour	10.79	9.00	6.35	4.00	8.95	9.00
	American Agricultural Chemical Co., Baltimore, Md.							
29989	Protox Pure Ground Meat Scraps	Baltimore	54.67	55.00	13.21	10.00	.93	.....
	American Linseed Co., New York, N. Y.							
29883	Old Process Oil Meal	Westminster	37.73	34.00	6.92	5.00	7.10	8.00
	American Maize-Products Co., New York, N. Y.							
29967	Cream of Corn Gluten Feed	Baltimore	23.17	23.00	2.03	1.50	5.82	9.00
	American Milling Co., Peoria, Ill.							
29929	Amco Dairy Feed	Fallston	26.85	25.00	5.59	5.00	12.55	16.00
29968	Knick-A-Poo Horse Feed	Baltimore	12.98	10.00	4.37	3.00	10.95	12.00
29969	Sucrene Calf Meal	Baltimore	22.11	20.00	3.92	4.00	3.10	3 00
29970	Sucrene Dairy Feed	Baltimore	20.62	16.00	5.62	3.50	11.20	14.00
29971	Sucrene Hog Meal	Baltimore	24.48	16.00	4.55	4.00	8 27	14.00
29884	Sucrene Horse Feed with Alfalfa	Walkersville	12.10	10.00	3.54	2.50	10.65	12.00
29972	Sucrene Scratch Feed	Baltimore	11.41	10.00	3.02	2.50	2.31	5.00
	Arcady Farms Milling Co., Chicago, Ill.							
29885	Dairy Feed	Taneytown	16.32	16.00	6.85	3.50	13.42	15.00
	Archer Daniels Linseed Co. Buffalo, N. Y.							
29886	Pure Old Process Ground Oil Cake	Emmitsburg	37.03	30.00	7.33	6.00	6.80	10.00
	Atlantic Export Co., New York, N. Y.							
29949	Dried Brewers Grains	Rising Sun	27.55	25.00	7.50	6.75	13.62	14 00
	J. J. Badenoch Co., Chicago, Ill.							
29887	Gloskoat Horse Feed	Chewsville	12.72	10.00	3.30	2.00	12.98	12.00
	Baltimore Pearl Hominy Co., Baltimore, Md.							
29963	Spring Garden Dairy Feed	Baltimore	19.74	20.00	3 54	5.00	8.05	11.00
29871	Spring Garden Horse Feed	Baltimore	12.29	12.00	6.13	5.00	6.35	10.00
29880	Spring Garden Hog Feed	Easton	11.76	10.00	5.75	6.00	5.73	6.00
29927	Spring Garden Hominy Feed	Towson	11.32	10.00	3.70	6.00	4.18	6.00

	M .F. Baringer, Philadelphia, Pa.							
40019	Choice Cotton Seed Meal	Bel Air	41.51	41.00	7.03	6.50	11.04	9.00
29888	Cotton Seed Feed	Westminster	20.53	20.00	4.14	3.00	22.08	26.00
	W. P. Battle & Co., Memphis, Tenn.							
29889	Cotton Seed Feed Meal	Hagerstown	36.51	36.00	6.48	5.00	12.30	10.00
	Fred. Bauernschmidt, Baltimore, Md.							
40023	Brewers Dried Grains	Baltimore	21.59	26.00	6.22	6.00	17.30	13.00
	Blamberg Bros., Inc, Baltimore, Md.							
40011	Cornell Brand Buttermilk Laying Mash	Baltimore	19.13	16.75	4.97	3.50	7.40	6.00
	Blatchford Calf Meal Factory, Waukegan, Ill.							
29973	Egg Mash	Baltimore	21.41	19.00	4.44	4.00	9.89	10.00
29974	Milk Mash	Baltimore	23.17	20.00	4.70	4.00	5.90	7.50
	J. Bolgiano & Sons, Baltimore, Md.							
29955	Square Deal Poultry Food	Baltimore	11.93	11.50	3.88	3.87	2.40	2.76
	F. W. Brode & Co., Memphis, Tenn.							
29870	Cotton Seed Meal	Cumberland	39.75	36.00	7.87	5.00	8.90	14.00
	Buckeye Cotton Oil Co., Cincinnati, Ohio							
29890	Cotton Seed Meal	Sykesville	32.64	36.00	6.43	5.00	14.60	14.00
	Butler County Feed & Milling Co., Greenville, Ala.							
40015	Velvet Bean Meal	College Park	18.08	18.00	4.22	4.25	11.68	10.00
	Chapin & Co., Chicago, Ill.							
40012	Unicorn Dairy Ration	Rockville	27.03	26.00	6.19	5.50	8.62	11.00
	Clover Leaf Milling Co., Buffalo, N. Y.							
29930	Big Clover Leaf Complete Ration	Rocks	25.01	24.00	4.01	4.50	14.95	15.00
29891	Cotton Seed Feed	Rockville	20.71	20.00	4.19	3.50	21.40	22.00
29892	Clover Leaf Dairy Ration	Bucklodge	20.18	16.00	5.70	3.50	12.40	15.00
29893	Peerless Milk Ration	Walkersville	22.46	20.00	6.85	5.00	10.25	12.00
29990	Polo Horse Feed	Baltimore	10.09	9.26	2.55	1.50	16.73	17.15
	Corby Co., Washington, D. C.							
29950	Dried Yeast Grains	Rising Sun	17.72	16.00	5.29	5.00	18.95	22.00
	Corn Products Refining Co., New York, N. Y.							
29877	Buffalo Corn Gluten Feed	Baltimore	27.20	23.00	3.40	1.00	7.61	8.50
29956	Diamond Gluten Meal	Baltimore	43.18	40.00	.84	1.00	2.47	4.00
29894	Diamond Hog Meal	Silver Spring	21.94	18.00	14.55	7.00	10.77	13.00
	David Stott Flour Mills, Detroit, Mich.							
29872	Bran & Wheat Screenings	Baltimore	16.15	14.00	4.87	4.00	8.30	10.50

No.	Name of Manufacturer and Feeding Stuffs.	Place of Sampling.	Protein.		Fat or Ether Extract.		Crude Fiber.	
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Albert Dickinson Co., Chicago, Ill.							
29976	Hobby Horse Feed	Baltimore	13.16	9.00	2.90	1.50	12.71	15.00
29977	Rival Hog Feed	Baltimore	16.23	12.50	4.28	3.00	10.47	12.50
	Dixie Mills Co., East St. Louis, Ill.							
29881	Horse & Mule Feed	Westover	11.76	10.00	3.26	2.50	9.75	12.00
	Early & Daniel Co., Cincinnati, Ohio.							
29991	Tuxedo "D" Chop	Baltimore	13.07	10.00	4.18	3.00	9.58	12.00
	Jonas F. Eby & Son, Lancaster, Pa.							
29895	Crystaloid Dairy Feed	Emmitsburg	19.74	16.50	5.83	3.50	12.02	14.00
	Empire Cotton Oil Co., Atlanta, Ga.							
29896	Gilt Edge Cotton Seed Meal	Silver Spring	37.21	36.00	6.67	5.50	10.62	14.00
	John W. Eshelman, Lancaster, Pa.							
29992	Hamilton Horse Feed	Baltimore	12.11	9.00	2.90	2.00	14.48	16.00
29964	Scratch Feed	Baltimore	11.06	10.00	3.47	3.00	2.30	4.00
29897	Stock Feed	Thurmont	12.81	10.00	4.39	3.00	10.35	10.00
	Fleischmann Co., Chicago, Ill.							
29931	Dried Grains	Fallston	20.27	18.00	6.42	4.00	17.35	19.00
	Frederick County Farmers Exchange, Frederick, Md.							
29898	Gambrill Dairy Feed	Sykesville	15.01	14.50	5.15	5.00	11.22	12.00
29899	Gambrill Hog Feed	Buckeystown	15.18	15.00	4.24	4.00	9.05	9.00
	Fritz Co., Philadelphia, Pa.							
29957	Meat & Bone Scraps	Baltimore	42.65	40.00	14.37	10.00	.68	2.00
	Gambrill Thomas Co., Frederick, Md.							
29932	Dairy Feed	Union Bridge	19.13	16.00	3.40	5.50	13.40	16.00
	Golden Grain Milling Co., East St. Louis, Ill.							
29923	Horse & Mule Feed	Baltimore	11.76	9.00	2.65	2.00	12.20	14.00
29984	Puritan Horse & Mule Feed	Govans	11.85	9.00	3.35	1.00	11.83	16.00

	Goldsboro Pure Feed Co., Goldsboro, Pa.							
29933	June Bug Dairy Feed	Ladiesburg	18.43	18.00	5.05	4.00	12.55	12.00
	Grain Belt Mills Co., So. St. Joseph, Mo.							
29993	Pennant Horse & Mule Feed	Baltimore	12.90	10.00	2.04	1.00	15.23	18.00
29962	Red Dairy Feed	Hyattsville	15.45	15.00	3.73	3.00	12.10	12.00
	Hafleigh Rendering Co., Philadelphia, Pa.							
40035	Meat and Bone Scraps	Preston	50.19	40.00	19.78	10.00	1.35	2.00
	Hales & Edwards Co., Chicago, Ill.							
29900	Harvest Horse Feed	Silver Spring	13.25	10.00	2.95	2 00	12.69	15.00
29876	Red Comb Meat Mash	Berwyn	19.48	15.00	4.16	4.00	7.20	.....
29875	Red Comb Poultry Feed	Berwyn	11.23	9.00	3.75	2 00	1.95	7.00
29901	Red Horn Dairy Feed	Sykesville	26.94	25.00	5.38	4.00	11.10	15.00
	Dwight E. Hamlin, Pittsburgh, Pa.							
29941	Quality Feed	Baltimore	12.02	9.00	2.90	2.00	14.78	10.00
	W. S. Hoge & Son, Inc., Washington, D. C.							
29902	Columbia Dairy Feed	Germantown	22.90	20.00	6.35	5.00	10.30	15.00
	Ideal Rendering Co., North Wales, Pa.							
40016	Meat Scraps	Baltimore	47.56	55.00	15.71	14.00	.40	2.00
	International Sugar Feed Co., Minneapolis, Minn.							
40025	Climax Dairy Feed	Baltimore	14.04	12.50	6.24	4.00	13.13	15.00
29903	Grofast Calf Meal	Middletown	29.48	25.00	6.57	5.00	8.38	10.00
29951	Special Dairy Feed	Rising Sun	18.69	15.00	6.65	4.50	11.52	15.00
	International Sugar Feed No. 2 Co., Memphis, Tenn.							
29934	Honor Horse Feed	Forest Hill	14.39	11.00	3.08	3.00	15 60	22.00
29952	Jewell Dairy Feed	Conowingo	10.97	9.00	2.71	2.00	18.50	15.00
29904	Milk Made Dairy Feed	Middletown	26.50	24.00	7.70	5.00	9.20	15.00
29935	Planters Dairy Feed	Arcadia	25.62	22.00	3.51	3.50	16.75	18.50
	Kornfalfa Feed Milling Co., Kansas City, Mo.							
29942	Kutter Horse & Mule Feed	Annapolis	13.60	9.00	2.32	1.00	17.23	20.00
	Chas. A. Krause Milling Co., Milwaukee, Wis.							
29958	Badger Evergreen Feed	Baltimore	13.43	12.00	1.40	.50	25.45	30.00
29978	Badger Horse Feed	Baltimore	11.85	10.00	2.88	2.00	11.56	12.00
29874	Cream City Dairy Feed	Baltimore	20.45	19.00	4.47	3.00	13.60	15.00
29959	Cream City Horse Feed	Baltimore	11.58	10.00	2.80	1.50	11.57	14.00
29924	Hog Feed	Baltimore	19.22	15.00	5.06	5.00	6.75	9.00
29905	Sweet Cud Dairy Feed	Sykesville	25.71	24.00	4.45	3.75	11.97	15.00

No.	Name of Manufacturer and Feeding Stuffs.	Place of Sampling.	Protein.		Fat or Ether Extract.		Crude Fiber.	
			Found.	Guaranteed.	Found.	Guaranteed.	Found.	Guaranteed.
	Lancaster Mill & Elevator Co., Lancaster, Pa.							
29953	Alfalfa Horse Feed	Rising Sun	12.11	10.00	3.90	2.00	11.95	16.00
29960	Conestoga Horse Feed	Baltimore	12.55	10.00	3.40	2.50	14.08	14.00
29947	Dairy Feed	Baltimore	18.69	16.50	5.15	4.00	14.03	16.00
40021	Liberty Horse Feed	Baltimore	9.65	7.00	2.12	2.00	13.95	16.00
40022	Tally-Ho Horse Feed	Baltimore	8.69	7.00	3.10	2.00	15.50	16.00
	Larrowe Milling Co., Detroit, Mich.							
29936	Big Six (6) Dairy Feed	Hampstead	22.29	21.00	5.37	4.00	7.28	12.00
29906	Dairy Feed	Hagerstown	22.11	20.00	4.30	3.00	12.20	14.00
29907	Dried Beet Pulp	Hagerstown	9.68	8.00	.42	.50	18.40	20.00
40026	Larro-Feed	Baltimore	22.46	20.00	4.43	3.00	11.80	14.00
	Julius Marcus, New York, N. Y.							
40031	Copra Meal	New York	19.48	20.00	13.30	7.00	9.45	12.00
40032	Linseed Meal	New York	34.05	33.00	6.35	6.00	8.70	10.00
	D. B. Martin Co., Baltimore, Md.							
40034	Digester Tankage	Baltimore	41.77	40.00	10.42	8.00	3.80	2.00
	Meridian Grain & Elevator Co., Meridian, Miss.							
29908	Tip Top Cottonseed Meal	Sykesville	33.96	36.00	6.29	5.00	14.70	15.00
	Joel Moores & Co., Baltimore, Md.							
40033	Beef Cracklings for Poultry	Baltimore	66.04	50.00	12.50	12.00	.....	.....
	P. F. Obrecht & Son, Baltimore, Md.							
29928	Hog Meal	Towson	19.83	16.00	4.44	3.50	8.98	8.00
	Omaha Alfalfa Milling Co., Omaha, Neb.							
40028	Special Horse & Mule Feed	Baltimore	11.23	9.00	1.75	1.00	14.60	10.00
	Park & Pollard Co., Chicago, Ill.							
40005	Growing Feed	Baltimore	15.97	10.00	2.85	1.50	5.18	3.00
29909	Lay or Bust Dry Mash	Chewsville	21.50	18.00	3.60	1.50	8.25	12.00
40006	Screen Scratch Feed	Baltimore	10.79	10.00	3.24	1.50	2.33	5.00
29910	Stevens Forty-four Dairy Ration	Chewsville	26.94	24.00	6.30	5.00	10.25	14.00

	M. C. Peters Mill Co., Omaha, Neb.							
40007	Arab Horse Feed	Baltimore	12.65	10.00	3.65	2.00	9.38	15.00
40017	High Score Feed	Baltimore	12.72	10.00	1.72	.50	21.60	26.00
29948	King Corn Horse & Mule Feed	Baltimore	13.86	10.00	2.93	1.50	12.69	18.00
40036	June Pasture Feed	Baltimore	11.67	10.00	.70	.50	17.10	25.00
29878	Rabbit Mule Feed	Baltimore	12.90	10.00	2.07	1.50	14.10	18.00
40008	Re-Peter Horse Feed	Baltimore	12.96	10.00	2.97	1.50	12.35	18.00
40009	Red Feather Scratch Feed	Baltimore	12.11	10.00	3.30	3.00	2.80	6.00
	Pillsbury Flour Mills Co., Minneapolis, Minn.							
40024	Barley Mill Feed	Baltimore	11.93	8.00	3.09	2.00	14.55	20.00
	Poe Cottonseed Products Co., Memphis, Tenn.							
29925	Raven brand Cottonseed Feed	Baltimore	20.27	20.00	3.69	3.00	23.60	25.00
	Quaker Oats Co., Chicago, Ill.							
29937	Banner Dairy Feed	Forest Hill	14.39	9.75	1.45	3.70	30.10	10.50
29911	Big "Q" Dairy Rations	Silver Spring	23.52	21.00	5.06	6.00	9.98	10.00
29954	Dairy Feed	Bel Air	19.31	16.00	4.72	4.50	13.25	16.00
29943	Dairy Feed with Molasses	Annapolis	18.69	16.00	4.28	4.50	14.85	16.00
40029	Full-O-Pep Dry Mash	Ellicott City	20.97	20.00	6.75	4.00	7.57	10.00
29944	Green Cross Mixed Horse Feed	Annapolis	10.27	10.00	3.08	2.50	13.93	12.00
40030	Schumacher Feed Kiln Dried Ration	Ellicott City	11.85	10.00	4.42	3.25	9.30	10.00
29912	Schumacher F. S. Feed	Silver Spring	12.81	10.00	3.26	3.25	8.02	10.00
40000	Schumacher Special Horse Feed	Baltimore	15.01	9.25	2.88	8.25	5.98	8.00
	Ralston Purina Co., St. Louis, Mo.							
29945	Chicken Chowder Feed	Baltimore	20.18	12.00	4.73	4.00	7.87	8.00
40001	Chicken Fatena Feed	Baltimore	16.67	9.00	6.70	5.00	7.70	9.00
29914	Calf Meal	Hagerstown	33.70	33.00	3.80	4.00	3.05	3.50
40038	Cow Chow Feed	Baltimore	26.59	24.00	5.35	4.30	9.10	12.00
40037	Good Luck Feed with Molasses	Baltimore	10.71	9.00	2.38	1.50	14.45	15.00
40002	O Molene Feed	Baltimore	12.11	8.70	4.97	3.20	7.73	8.00
29915	Protena Dairy Feed	Westminster	17.29	16.50	3.92	3.50	14.82	13.50
29873	Protena Dairy Feed	Baltimore	21.81	20.00	4.71	3.50	14.95	16.50
40003	Protena Horse Feed	Baltimore	10.71	9.00	3.21	1.50	13.78	15.00
29916	Purina Pig Chow	Mt. Airy	17.55	14.00	5.41	3.20	9.43	9.00
40004	Purina Scratch Feed	Baltimore	11.58	10.00	3.72	2.50	2.05	4.00
	Reindollar Bros. & Co., Taneytown, Md.							
40039	Reinola Chick Feed	Taneytown	10.35	9.00	4.30	3.00	2.10	3.00
40041	Reinola Poultry Mash	Taneytown	12.55	12.00	3.55	3.00	4.35	4.00
40040	Reinola Scratch Feed	Taneytown	9.83	9.00	6.80	2.00	2.45	3.00

No.	Name of Manufacturer and Feeding Stuffs.	Place of Sampling.	Protein.		Fat or Ether Extract		Crude Fiber.	
			FOUND.	Guaranteed.	FOUND.	Guaranteed.	FOUND.	Guaranteed.
	Ryde & Co., Chicago, Ill.							
29913	Cream Calf Meal	Middletown	26.24	25.00	6.24	5.00	7.30	6.00
	Wm. G. Scarlett & Co., Baltimore, Md.							
29961	Oriole Brand Beef Scraps	Baltimore	54.84	50.00	16.25	12.00	2.70	3.00
40027	Oriole Brand Beef Scraps	Baltimore	53.79	50.00	13.13	12.00	.....	.....
40020	Oriole Brand H. G. Dry Mash	Baltimore	21.94	20.00	5.41	4.00	12.30	9.00
	C. S. Schermerhorn & Son, Baltimore, Md.							
40014	Cotton Seed Meal	Baltimore	35.28	36.00	6.75	6.00	14.67	10.00
29938	Prime Cotton Seed Meal	Fallston	37.38	36.00	5.55	6.00	11.90	10.00
	Shane Bros. & Wilson Co., Chicago, Ill.							
40044	Egyptian Stock Feed	Hagerstown	12.81	11.70	4.05	4.40	9.10	10.30
	Sheffeild-King Milling Co., Minneapolis, Minn.							
29979	Criterion Barley Feed	Baltimore	14.04	10.70	2.95	3.00	8.23	14.00
	Spencer Kellogg & Sons, Inc., Buffalo, N. Y.							
29980	Pure Old Process Cocoanut Meal	Baltimore	22.97	20.00	10.03	6.00	7.41	11.00
29917	Pure Old Process Oil Meal	Hagerstown	37.29	33.00	7.02	5.00	5.90	10.00
	Sugarine Co., Peoria, Ill.							
29981	Dairy Feed	Baltimore	19 04	16.00	3.62	3.50	13.75	14.00
29926	Ideal Horse Feed	Baltimore	11.58	10.00	2.73	2.50	11.82	14.00
29985	Poultry Mash	Baltimore	20.80	18 00	4.35	3.50	10.47	12.00
29982	Universal Scratch Feed	Baltimore	11.06	10.00	3.04	2.50	2.18	5.00
	Swift & Co., Inc. Kearny, N. J.							
29918	Digester Tankage	Hagerstown	63.71	60.00	7.80	6.00	1.48	3.00
29946	Digester Tankage	Baltimore	64.32	60.00	6.95	3.00	2.15	3.00
29919	Laymore Meat Scraps	Hagerstown	48.88	45.00	13.75	6.00	1.56	3.00
	Taylor Commission Co., Atlanta, Georgia							
29879	Good Cotton Seed Meal	Baltimore	37.03	36.00	5.90	5.50	11.78	14.00
	Tennessee Fibre Co., Memphis, Tenn.							
40010	Creamo Brand Cotton Seed Feed	Baltimore	23.08	20.00	3.63	4.00	19.97	23.00

	Thomas & Co., Frederick, Md.							
29939	Dairy Feed	Union Bridge..	21.59	16.50	4.31	3.50	12.75	14.00
	Ubiko Milling Co., Cincinnati, Ohio.							
29920	Union Grains	Walkersville ..	25.18	24.00	6.01	5.00	8.50	10.00
	Union Seed & Fert. Co., New York, N. Y.							
29965	Surety Brand Cottonseed Meal	Baltimore	37.38	36.00	6.56	5.50	12.70	14.00
	Van Iderstine Co., Long Island City, N. Y.							
29983	Darling's High Protein Meat Scraps	Baltimore	48.88	55.00	13.65	5.00	2.48	3 00
29986	Darling's Pure Ground Meat Scraps	Baltimore	47.91	43.00	12.92	5.00	2.35	3.00
	Virginia Feed & Milling Corporation, Alexandria, Va.							
29966	Fairfax Horse and Mule Feed	Baltimore	11.32	10.00	2.66	3.00	16.15	20.00
	Western Grain Products Co., Hammond, Ind.							
29921	Calumet Alfalfa Horse Feed	Silver Spring..	3.51	10.00	3.61	2.50	13.85	15.00
29940	Calumet Dairy Feed	Union Bridge..	22.11	20.00	5.23	5.00	11.95	11.00
29988	Calumet Scratch Feed	Rising Sun....	12.11	10.00	3.50	2.50	3.80	5.50
29922	Hammond Dairy Feed	Barnesville....	17.81	16.50	4.47	3.50	10.65	14.20

BRANDS OF AGRICULTURAL LIME LICENSED FOR SALE IN MARYLAN FOR THE YEAR 1919.

	Guaranteed Analysis	
	Lime, CaO	Magnesia, MgO
F. D. Adams, Hagerstown, Md., No. 7.		
Marl	50	
Andrews & Skinner, Cambridge, Md.		
H. G. Hydrated Oyster Shell Lime	50	
J. E. Baker Company, York, Penna.		
Empire Burned Lump Lime	85	3
Victor Burned Limestone	50	35
Victor Fine Ground Limestone	47	2
S. W. Barrick & Son, Woodsboro, Md.		
Ground Lime	85	
H. G. Agricultural Lime	85	
Hydrated Lime	56	
Beaver Dam Marble Co., Cockeysville, Md.		
Dolomitic Limestone	30.24	18.55
F. & H. Benning Oyster and Lime Co., Galloways, Md.		
Ground Oyster Shells	50	
Blair Limestone Co., Martinsburg, W. Va.		
Opequon Hydrated Lime	65	2
Herbert Bryant's Son, Alexandria, Va.		
Pulverized Shell Lime	45	
Carbo-Agricultural Lime Co., Wilmington, Del.		
Carbo-Lime	40	
Chesapeake Shell and Lime Co., Crisfield, Md.		
Ground Oyster Shells	50	
Crisfield Shell Lime Co., Inc., Crisfield, Md.		
Hydrated Oyster Shell Lime	60	
Emig Lime Company, Hellam, Penna.		
Agricultural Lump Lime	97.53	
Fertile Chemical Co., Cleveland, Ohio.		
Lime-Fertile	35.84	4.96
Fountain Rock Lime Co., Woodsboro, Md.		
Agricultural Lump Lime	85	
Ground Lime	85	
Hydrated Lime	50	
M. J. Grove Lime Co., Lime Kiln, Md.		
Our Famous Co. Agricultural Lime	75	
Our Famous Co. Ground Lime	75	
Our Famous Co. Hydrated Lime	65	
Pulverized Limestone	50	
John S. Hyde, Westminster, Md., No. 10.		
Agricultural Lump Lime	85	
O. J. Keller Lime Co., Buckeystown, Md.		
Agricultural Lime	85	
D. C. Kemp Lime Co., Frederick, Md.		
Agricultural Lump Lime	70	10
Hydrated Lime	55	10
Kirk, Souders & Co., Hancock, Md.		
Ground Lime Marl	50.88	.97
Knickerbocker Lime Co., Philadelphia, Pa.		
Ground Limestone	44	
Hydrated Lime	45	30
Run of Kiln Lime	50	33

	Guaranteed Analysis	
	Lime, CaO	Magnesia, MgO
E. J. Lavino & Co., Philadelphia, Pa.		
Pulverized Limestone	50	
Legore Combination Lime Co., Legore, Md.		
Agricultural Lump Lime	85	
Refined Hydrated Lime	50	
Joshua Long, Williamsport, Md., R. F. D.		
Lime-Marl		
A. C. Loockerman, Crisfield, Md.		
Burnt Oyster Shell Lime	60	
McAleer Lime Co., Walkersville, Md.		
Agricultural Lump Lime	90	
Merion Lime and Stone Co., Norristown, Pa.		
Hydrated Lime	45	30
Run of Kiln Lime	50	30
Millville Stone and Lime Co., Millville, W. Va.		
Victor Brand Ground Lime	56	35
Victor Brand Hydrated Lime	45	25
Henry Mosser, Oakland, Md., No. 1.		
Agricultural Burnt Lime		
Natural Lime-Marl Co., Roanoke, Va.		
Lime-Marl	50	
Orem & Winterbottom, Cambridge, Md.		
Burnt Oyster Shells	80	
Palmer Lime and Cement Co., York, Pa.		
Agricultural Lump Lime	85	2
Challenge Br. Hydrated Lime	65	1
Ground Limestone	45	5
Peerless Oyster Co., Baltimore, Md.		
Unburnt Oyster Shell Lime	50	
Potomac Company, Harpers Ferry, W. Va.		
Potomac Hydrated Lime	68	2
Powhatan Lime Co., Strasburg Junction, Va.		
Agricultural Lime	65	5
Quarryville Lime and Stone Co., Quarryville, Pa.		
Quarryville Lime	50	2
D. F. Roddy, Emmitsburg, Md.		
Agricultural Lump Lime	65	
Salisbury Lime Co., Salisbury, Md.		
Hydrated Oyster Shell Lime	60	
Security Cement and Lime Co., Hagerstown, Md.		
Berkeley Ground Lime	90	3
" Hydrated Lime	70	2
" Hydra-Calcite	50	2
" Lump Lime	80	
" Pulverized Limestone	44	
Shank & Etzler, Frederick, Md.		
Lump Lime	60	35
Charles E. Staley, Frederick, Md., R. F. D. No. 7.		
Agricultural Lump Lime	90	2.08
Standard Lime and Stone Co., Buckeystown, Md.		
Agricultural Lime	90	
Ground Agricultural Lime	90	
Hydrated Agricultural Lime	70	
Pulverized Limestone	50	

	Guaranteed Analysis	
	Lime, CaO	Magnesia, MgO
George R. Staub, Westminster, Md.		
Agricultural Lump Lime	85.25	7.48
Steacy and Wilton Co., Wrightsville, Pa.		
Run of Kiln Lime	80	
Sterling Brand Hydrated Lime	65	
Lewis O. Stirn, Woodlawn, Md.		
Pulverized Raw Limestone	30	
Thomasville Stone and Lime Co., Thomasville, Pa.		
Ground Limestone	50	
Tidewater Portland Cement Co., Baltimore, Md.		
Lump Lime	92	1
Hydrated Lime	71	.50
Wm. H. Valliant & Bro., Bellevue, Md.		
Burnt Oyster Shell Lime	65	
Charles Warner Co., Wilmington, Del.		
Cedar Hollow Limoid	42	28
Pulverized Burned Lime	54	36
Pulverized Limestone	29	19
Run of Kiln Lime	56	37

PRACTICAL USE OF FEEDS.

The Maryland Feedingstuffs law requires that "concentrated feeds" be marked or tagged with the name and analysis of the same, that they be registered at the State College of Agriculture and that the College shall inspect and analyze them from time to time to see that the guaranteed analysis is correct. The common grains, ground or unground, and the common mill by-products, such as bran and middlings, are not required to be registered or to bear the analysis but are required to be unadulterated.

Protein is the most expensive constituent of feeds and of first consideration. The common roughages and even corn are deficient in protein for most feeding purposes, especially for growing animals and for dairy cows. Protein is required for the growth of animals, for tissue formation and repair, while fat and carbonydrates furnish energy. As the farmer or dairyman generally buys concentrated feed to supplement his roughage and corn he will want a feed with considerably more protein than the latter, that is more than 10 per cent,, so as to properly supplement or "balance" the ration. The kind and amount will depend on the home feed to be supplemented and the kind of animal. A maintainance ration, as is required for horses, should not be as rich in protein as should that for growing animals or for dairy animals.

Coton seed meal is a very important concentrate but should contain over 36% of protein. If it contains less it is adulterated with cotton seed hulls, which are about on a par with straw for feeding purposes. A mixture of cotton seed meal and hulls is often sold under the name of "Cotton Seed Feed," with a guarantee of 20% protein. This is sometimes purchased under the impression that one is getting cotton seed meal. The purchaser should note the analysis, especially as the mixture sometimes is branded "Cotton Seed Feed Meal" for the purpose, apparently, of deceiving the purchaser.

For a list of valuable bulletins, some free for the asking, see page 16. It is also recommended that those interested in feeding get one or more of the standard works on feeding there listed.

For directions in regard to the practical use of feeds and the calculation of rations the following bulletins are recommended:

Sent free by the U. S. Dept. of Agriculture, Washington, D. C.

Raising and Fattening Beef Calves in Alabama. (Department Bulletin 73.)

Economical Cattle Feeding in the Corn Belt. Farmers' Bulletin 588.)

The Feeding of Dairy Cows (Farmers' Bulletin 743.)

Feeding and Management of Dairy Calves. (Farmers' Bulletin 777.)

Equipment for Farm Sheep Raising. (Farmers' Bulletin 810.)

Farm Sheep Raising for Beginners. (Farmers' Bulletin 840.)

Utilization of Farm Wastes in Feeding Live Stock. (Farmers' Bulletin 873.)

Swine Management. (Farmers' Bulletin 874.)

Feeding Horses (Farmers' Bulletin 1030.)

For Sale, at prices named, by "Superintendent of Documents, Government Printing Office, Washington, D. C." (Postage stamps not accepted.)

Cost of Raising a Dairy Cow. (Department Bulletin 49.) Price, 5 cents.

Computation of Rations for Farm Animals. (Department Bulletin 459.) Price, 5 cents.

Feeding Farm Animals .(Farmers' Bulletin 22.) Price, 5 cents.

Principles of Horse Feeding. (Farmers' Bulletin 170.) Price, 5 cents.

Pig Management. (Farmers' Bulletin 205.) Price, 5 cents.

Crimson Clover, Utilization. (Farmers' Bulletin 579.) Price 5 cents.

Feeding for Meat Production. (Bur. of Animal Ind. Bulletin 108.) Price, 10 cents.

Nutritive Value of Non-protein of Feeding Stuffs. (Bureau of Animal Industry Bulletin 139.) Price 10 cents.

Maintenance Rations of Farm Animals. (Bureau of Animal Industry Bulletin 143. Price, 15 cents.

Meat Situation in the United States. Part IV. Utilization and Efficiency of Available American Feed Stuffs. (Report 112.) Price, 5 cents.

The following books are highly recommended. Order from the publishers at the prices named:

Feeds and Feeding, Abridged, Henry & Morrison. Published by the Henry-Morrison Company, Madison, Wis., Price $1.75.

Feeding of Animals, W. H. Jordan. Published by the Macmillan Company, New York, Price $1.75.

The Nutrition of Farm Animals, H. P. Armsby. Published by the Macmillan Co., New York, Price $2.60.